FINAL ENVIRONMENTAL ASSESSMENT
FOR
SOLAR PHOTOVOLTAIC SYSTEM
AT
VETERANS HEALTH CARE SYSTEM OF THE OZARKS
FAYETTEVILLE, ARKANSAS

PREPARED FOR:

VETERANS ADMINISTRATION

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ACRONYMS AND ABBREVIATIONS

AC	Alternating Current
BMPs	Best Management Practices
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dB	Decibels
dBA	a-weighted decibels
DNL	Day-Night Sound Level
EA	Environmental Assessment
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FY	Fiscal Year
Hz	Hertz
kWh	Kilowatts per hour
MT	Metric Tons
NCA	National Cemetery Administration
NEC	National Electric Code
NEPA	National Environmental Policy Act
NOVI	NOVI Energy
P.L.	Public Law
PV	Photovoltaic
SHPO	State Historic Preservation Officer
SWPPP	Storm Water Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
VA	Veterans Administration

VHA	Veterans Health Administration
VHSO	Veterans Healthcare System of the Ozarks

1.0 INTRODUCTION

The Department of Veterans Affairs (VA) evaluated Veterans Health Administration (VHA) and National Cemetery Administration (NCA) facilities nationwide to identify locations with the highest potential to use renewable energy technologies. The evaluation, completed by NOVI Energy (NOVI), identified the Veterans Healthcare System of the Ozarks (VHSO) facility in Fayetteville, Arkansas as a feasible location for solar photovoltaic (PV) system installation (NOVI, 2010).

The proposal to install a solar photovoltaic system at the VHSO is a federal action subject to the procedural requirements of the *National Environmental Policy Act of 1969* (NEPA) (42 United States Code 4321 et seq.). NEPA requires federal agencies to consider environmental consequences in their decision-making process. The Council on Environmental Quality (CEQ) issued regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) to implement NEPA that include provisions for both the content and procedural aspects of the required environmental analysis. The VA complies with NEPA and CEQ implementing regulations in accordance with 38 CFR Part 26 (*Environmental Effects of the Department of Veterans Affairs Actions*).

The VA prepared this Environmental Assessment (EA) to analyze potential direct, indirect, and cumulative environmental impacts of a solar photovoltaic system installation (pproposed action). For purposes of comparison, this EA also evaluates the impacts of not installing a solar PV system (no action alternative). This EA meets VA's compliance requirements under NEPA and provides the necessary information for VA to make an informed decision regarding the proposed installation and use of a solar PV system at the VHSO.

1.1 BACKGROUND

The VA facility located in Fayetteville, Arkansas is part of the Veterans Health Care System of the Ozarks and has been providing high quality care for our nation's Veterans since 1935. The VHSO serves Veterans living in and visiting 23 counties in northwest Arkansas, southwest Missouri and eastern Oklahoma. Services include primary care, mental health care, specialty care, women's clinic, pharmacy, social work, surgery, and nutrition services. (VA, 2011).

Facility management is interested in installing a Solar PV system that would produce electric energy at this Medical Center. This Facility location has year round high solar illumination and is a suitable location for this type of application. (NOVI, 2010).

If implemented, the proposed project is expected to result in an overall increase in operating efficiencies at the VHSO, resulting in annual energy savings, and provide environmental benefits for the facility and the surrounding community.

1.2 PURPOSE AND NEED

The **purpose** of this project, the installation and operation of a PV system, is to supply the VHSO with a more efficient and cost-effective source of energy. The use of a PV system will assist the VA in meeting their renewable energy goals. The stated goals for energy conservation and the use of renewable energy include promoting efficiency in building design and operations, energy consumption, water conservation and use of new advances in energy conservation technologies.

The **need** for the project is for the VHSO to generate energy through more efficient and environmentally preferable means.

Specific laws and executive orders require federal agencies to reduce energy consumption and improve energy efficiency through the use of alternative fuels and renewable sources. The *National Energy Conservation Policy Act* serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it is regularly updated and amended by subsequent laws, the most recent being the *Energy Independence and Security Act of 2007*. Executive Order (E.O.) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, updates prior energy management practices and goals, such as reducing energy intensity by three percent annually through 2015 or by 30 percent by 2015, and requiring that at least half of the statutorily required renewable energy consumed annually is from new renewable sources (came into service after January 1, 1999). The E.O. directs federal agencies to implement renewable energy generation projects on agency property for agency use.

The VA has a need for reliable energy at its health care facilities while pursuing options for reducing energy demand and cost. The VA must also meet the renewable energy goals established by laws and executive orders. The purpose and need for installing and operating a solar PV system (proposed action) would be to meet E.O. 13423 goals through on-site installation of a renewable energy generation system and to reduce the amount of electrical energy needed from commercial sources.

1.3 LOCATION AND GENERAL DESCRIPTION OF THE AFFECTED AREA

The VHSO is located within the City of Fayetteville in Washington County, Arkansas. It is located in an urban area along a commercial corridor with residential neighborhoods to the south and west (see Figure 1-3).

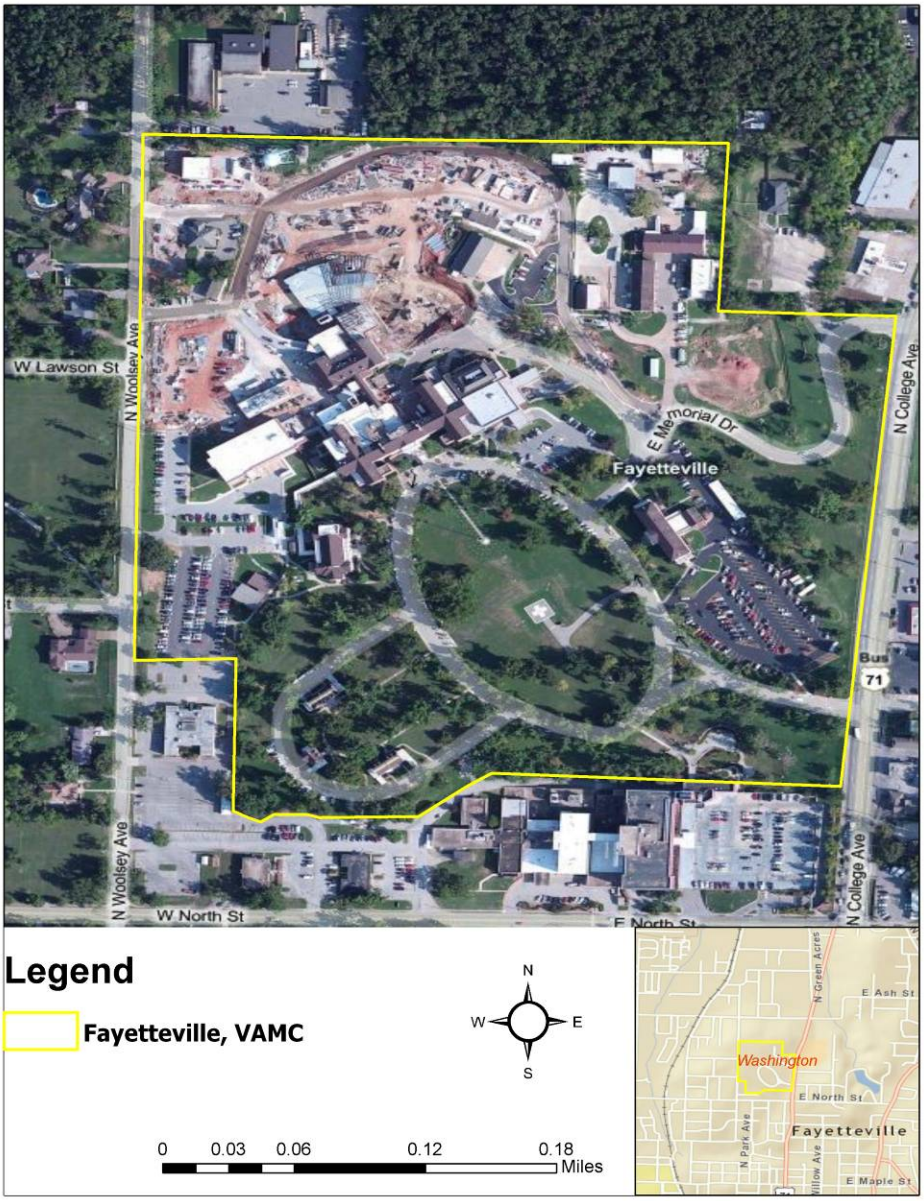

Figure 1-3: Project Vicinity Map

Electric power is supplied to the VA Fayetteville Medical Center from two Electric Power primary feeders at 12.47 kV. The feeders supply to outdoor primary switchgear (Building 27) located adjacent to the water tank at the northwest corner of the property. Facility personnel indicate that this new distribution switchgear was installed within the last year. Underground cables feed power to individual building transformers that step down power to 480 V and energize associated switchgear and panel boards. The Facility electrical systems including switchgears, transformers, and switches are operated and maintained by site utility personnel. (NOVI, 2010).

1.4 SCOPE OF EA

This EA analyzes the environmental impacts that would result from the Proposed Action and its alternative, the No Action alternative. This VA environmental assessment was prepared in compliance with the NEPA of 1969 (Public Law [P.L]. 91-190), the CEQ Regulations dated 28 November 1978 (40 Code of Federal Regulations (CFR) Parts 1500-1508), and the VA NEPA Implementing Procedures (38 CFR Part 26).

Key goals of NEPA are to help Federal agency officials make well-informed decisions about agency actions and to provide a role for the general public in the decision-making process. The study and documentation mechanisms associated with NEPA seek to provide decision-makers with sound knowledge of the comparative environmental consequences of the several courses of action available to them. NEPA studies, and the documents recording their results, such as this EA, focus on providing input to the particular decisions faced by the relevant officials.

This EA identifies, describes, and evaluates the potential environmental impacts that would result from the implementation of the proposed action and the no action alternative, taking into consideration possible cumulative impacts from other actions. As appropriate, the affected environment and environmental consequences of the action will be described in both site-specific and regional contexts. In instances where mitigation measures may lessen any potentially adverse impacts, this EA identifies such measures that should be implemented to further minimize environmental impacts.

2.0 PROPOSED ACTION AND ALTERNATIVES

2.1 ALTERNATIVE 1 – INSTALL A SOLAR PHOTOVOLTAIC SYSTEM

Under the proposed action, the installation and operation of a PV system at the VHSO, would increase efficiency from 12 to 18 percent for electricity (NOVI, 2010).

Under this alternative the VA would install a solar photovoltaic system consisting of a car-port canopy type compatible with an urban environment that would supplement the electrical power need of the facility.

2.1.1 Photovoltaic Solar Systems

PV cells convert energy in sunlight directly into electrical energy through the use of semi conductors, diodes and collection grids. PV cells are then linked together in a single frame, or module, to become a solar panel. This conversion occurs without any moving parts and without generating any noise or pollution (NOVI, 2010).

Rooftops, carports and ground-mounted arrays are common mounting locations. To be effective, solar panels must be mounted in a non-shaded location. The angle of inclination of the PV panels, the amount of sunlight available, the orientation of the panels, the amount of physical space available and the efficiency of the individual panels are all factors that affect the amount of electricity that is generated (NOVI, 2010).

Under full sun, each panel produces direct current (DC) electricity at about 12 to 18 percent efficiency, although this efficiency depends on the type of collector, the tilt and azimuth of the collector, the temperature and the level of sunlight. An inverter is required to convert the DC to AC at the desired voltage compatible with building and utility power systems. The balance of the system consists of conductors/conduit, switches, disconnects and fuses (NOVI, 2010).

PV system installation can also include the installation of a remote web-based monitoring system that will display real-time data such as instantaneous kilowatts per hour (kWh) generation, cumulative kWh generation, dollars saved, and on-going environmental savings associated with the system. In addition to web access, this information can also be displayed on a flat panel monitor that can be installed at a location selected by the VA (NOVI, 2010).

2.1.2 *Canopy System*

In order to mount the PV panels over parking spaces a "car-port" type construction using steel support members is needed. Experience has shown that the supporting structures do not interfere with the flow of traffic. Each parking space typically accommodates four to six PV panels. The type of PV panels, equipment used to support the system, and any alterations or additions to the parking lot lighting are determined during the design phase of the project.

Figure 2-1 Typical Canopy Installation (Gable, 2010)

2.2 ALTERNATIVE 2 – NO ACTION

The electric monthly consumption for the VHSO ranges between 566,134 kWh to 1,005,972 kWh with an average monthly consumption of approximately 757,145 kWh (NOVI, 2011). Under the no action alternative the VHSO would not generate electricity on site and would continue to purchase all its power from the local utility.

2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED ANALYSIS

2.3.1 Roof Mounted System

The most common roof mounted system is referred to as a "fixed tilt" system typically mounted to a metal rack that is fixed at a specific angle (tilt). The tilt is determined by considering the geographic location, total targeted kWh production, seasonal electricity requirements and weather conditions such as wind and snow. The alignment of the panel should be such that it receives as much sunlight as possible (ideally facing due South).

Figure 2-2 Typical Rooftop Installation (Gable, 2010)

The type of PV panels and equipment used to mount the system are based on wind conditions and structural integrity of the roof determined during the design phase of the

project. In general, penetration/tie-down systems, non-penetrating ballasted type systems, or a combination of the two can be considered (NOVI, 2010).

While the study by NOVI indicated the feasibility of rooftop mounted systems at VHSO, concern for aesthetics and subsequent impacts to the historic character of the buildings led management to rule against the use of rooftop application at this facility.

2.3.2 Ground Mounted

Ground-mounted systems are designed to stack three panels together in a rack and position them with a 25-degree tilt. Spacing between racks is approximately 10 feet. Ground-mount designs typically require concrete and steel support posts or "screw-type" anchors to withstand wind loads and other factors. Finished installations result in racks over 5 feet in height at the tallest point.

Figure 2-3 Typical Ground Installation (Gable, 2010)

Again, because of concerns for the historical character of the area, ground based PV systems were eliminated from consideration.

2.3.3 Solar Thermal System

Figure 2-4 Typical Evacuated Tube Collector (Wikimedia Commons)

The two main types of solar thermal systems are evacuated tube and flat plate systems. Typically flat plate collectors are more efficient at 61% to 74% while evacuated tube collectors are 46% to 57% efficient. Evacuated tube collectors can produce higher temperature water than flat plate collectors and may be necessary depending on the application. These systems can be set up with either drain back systems or an anti-freeze solution to prevent damage to the system from freezing. Both systems often contain a storage tank to hold the heat absorbed by the system. Typically solar thermal systems are mounted on roofs. As with roof-top and ground based PV systems, concerns for the historical character of the area eliminated solar thermal system applications at this site.

3.0 PRELIMINARY REVIEW OF ENVIRONMENTAL ISSUES

3.1 INTRODUCTION

3.1.1 Impact Analysis

The existing environmental conditions serve as a baseline from which to identify and evaluate potential changes or impacts attributable to the proposed action and alternatives (i.e. affected environment). Baseline environmental conditions will be identified from aerial photos, topographical maps, existing documents, data from planning and resources agencies' websites, and communications with VA personnel. The impact analysis will consist of a four step process:

1) Description of the existing condition(s),
2) Analysis of potential environmental impacts from the proposed action,
3) Detailed description of measures required to mitigate adverse environmental impacts to an acceptable level if required were the proposed action implemented; and,
4) A statement of what unavoidable adverse impacts would remain after mitigation, if any mitigation were required.

3.1.2 Significance Criteria

The review team will use a systematic process to evaluate the significance of the predicted impacts. This process involves comparing the predictions to the significance criteria established by the team and set out in Table 3-1. These significance criteria were based on legal and regulatory constraints and on team members' professional technical judgment.

TABLE 3-1: IMPACT SIGNIFICANCE THRESHOLDS

Resource Area	Impact Significance Thresholds: An impact would be significant if it EXCEEDS the following conditions
Air Quality	The project would not produce emissions that would impede the area's conformity with the State Implementation Plan under the Clean Air Act.
Noise	Noise from the project would not create substantial areas of incompatible land use or contribute to a violation of any federal, state, or local noise regulation.
Cultural Resources	If any project implementation were to disturb cultural resources in such a way that mitigation under the supervision of the State Historic Preservation Officer (SHPO) was impractical.

Resource Area	Impact Significance Thresholds: An impact would be significant if it EXCEEDS the following conditions
Environmental Justice	If any project were to negatively impact minority and low income populations disproportionally relative to negative impacts to the general population as a whole.
Floodplains	Any impacts to floodplains would be confined to the immediate project area and would not cause any regional impacts.
Human Health and Safety	The project, with current and planned mitigation measures, would pose no more than a minimal risk to the health and safety of on-site workers and the local population.
Waste Management	The action is unlikely to cause air, water, or soil to be contaminated with hazardous material that poses a threat to human or ecological health and safety.
Geology and Soils	Any changes in soil stability, permeability, or productivity would be limited in extent. Full recovery would occur in a reasonable time, considering the size of the project. Mitigation, if needed, would be simple to implement and proven to be effective in previous applications.
Water Resources	Any changes to surface water quality or hydrology would be confined to the immediate project area. Full recovery would occur in a reasonable time, considering the size of the project and the affected area's natural state.
Wetlands	Any impacts to wetlands would be confined to the immediate project area and would not cause any regional impacts. Planned mitigation measures would fully compensate for lost wetland values in a reasonable time.
Terrestrial Vegetation	Any changes to native vegetation would be limited to a small area and would not affect the viability of the resources. Full recovery would occur in a reasonable time, considering the size of the project and the affected resource's natural state. Mitigation, proven to be effective in previous applications, would be implemented, if needed.
Wildlife	Any changes to wildlife would be limited to a small portion of the population and would not affect the viability of the resource. Full recovery would occur in a reasonable time, considering the size of the project and the affected species' natural state.
Threatened or Endangered Species	Any effect to a federally listed species or its critical habitat would be so small that it would not be of any measurable or perceptible consequence to the protected individual or its population. This negligible effect would equate to a "no effect" determination in U.S. Fish and Wildlife Service terms.

Resource Area	Impact Significance Thresholds: An impact would be significant if it EXCEEDS the following conditions
Land Use	Any change in land use would be limited to a small area and would not noticeably alter any particular land use at the project site or in adjacent areas. The affected areas would fully recover in a reasonable time once the project is completed.
Population and Employment/Income	Changes to the normal or routine functions of the affected community are short-term or do not alter existing social or economic conditions in a way that is disruptive or costly to the community.
Infrastructure/ Utilities	The project would not noticeably affect or disrupt the normal or routine functions of public institutions, roads, electricity, and other public utilities and services in the project area.
Aviation	The project would not noticeably affect or disrupt the normal or routine functions of aviation in the immediate area.

3.1.3 Regulatory Considerations

Regulatory requirements and corresponding agencies that are responsible for addressing the requirements are in Table 3-2.

Table 3-2 Regulatory Requirements

Policy Document	Administrative Authority	Invoking Action	Requirement for Compliance
The National Environmental Policy Act	All federal agencies.	Federal actions that may impact the environment.	Requires Federal agencies to evaluate the environmental impacts of their actions, and integrate such evaluations into their decision-making processes.
Archaeological Resources Protection Act	Department of Interior	Excavation, removal, damage, or other alteration or defacing; or attempt to excavate, remove, damage, or otherwise alter or deface any archaeological resource located on public lands	If it is determined that implementing a federal action disturbs archaeological resources, work must cease and appropriate authorities notified.

Policy Document	Administrative Authority	Invoking Action	Requirement for Compliance
Clean Air Act	Environmental Protection Agency (EPA)	Any Federal action where the total of direct and indirect emissions in a non-attainment area would equal or exceed the provided rates.	If Project emission levels may exceed thresholds.
The Noise Control Act as amended, by the Quiet Communities Act	State and local regulatory bodies.	Any noise that may exceed locally established thresholds.	Requires compliance with State and local noise laws and ordinances.
Comprehensive, Environmental Response, Compensation, Liability	United States Environmental Protection Agency	Release or threatened release of a hazardous Substance.	Development of emergency response plans, notification, and cleanup.
Endangered Species Act	United States Fish and Wildlife Service	All actions in which there is discretionary Federal involvement or control.	Determination of no jeopardy to listed species and no destruction or adverse modification of critical habitat through consultation with the United States Fish and Wildlife Services
Federal Aviation Regulations	Federal Aviation Administration	Any Federal action.	Identify and take into account the adverse effects air traffic safety.
Federal Water Pollution Control Act	United States Environmental Protection Agency	Storage, use, or consumption of oil and oil products, which could discharge oil in quantities that could affect water quality standards, into or upon the navigable	Preparation of a Spill Prevention, Control, and Countermeasure Plan. Obtain a general National Pollutant Discharge

Policy Document	Administrative Authority	Invoking Action	Requirement for Compliance
		waters of the U.S.	Elimination System Permit
Historic Preservation Act	Advisory Council on Historic Preservation, State Historic Preservation Officer	Any undertaking by a Federal Agency	Assessment of effects through consultation with the Advisory Council on Historic Preservation and State Historic Preservation Officer
Occupational Health and Safety Act	Occupational Safety and Health Administration, Department of Labor	Activities performed in a workplace.	Adherence to occupational health and safety standards
Resource Conservation Recovery Act	United States Environmental Protection Agency	Collection of residential, commercial, and institutional solid wastes and street wastes Treatment, storage, or disposal of hazardous waste on-site.	Adherence to guidelines for waste storage and safety and collection equipment, frequency, and management. Determination of hazardous or non-hazardous nature of solid waste, obtains an EPA identification number if necessary, properly accumulate hazardous waste, and maintain a record.
Coastal Zone Management Act	Department of Commerce	Any Federal activity within or outside of the coastal zone that affects any land or water use or natural resource of the coastal zone.	Projected impact to land, water, or natural resources within the Coastal Zone.
Floodplain Management	Water Resources Council, Federal	Acquisition and management of	Determine whether the Proposed Action

Policy Document	Administrative Authority	Invoking Action	Requirement for Compliance
	Emergency Management Agency, Council on Environmental Quality	Federal lands; Federally undertaken, financed, or assisted construction; conducting Federal activities affecting land use.	would occur in a floodplain, and then evaluate potential effects of any action in a floodplain.

3.2 ISSUES CONSIDERED AND DISMISSED

The intent of NEPA is to focus the analysis on the human (i.e. physical, biological, and social) environment potentially affected by the federal action. Resources and attributes of the human environment that are not present on or in the vicinity of the VHSO, or that would not be affected by the proposed action or alternatives are not discussed. Table 3-3 lists these resources and provides the rationale for excluding them from further description and from impact analysis. Measures that will be incorporated into the proposed action to avoid or minimize adverse impacts are described in the specific resources sections in this chapter.

Table 3-3 - Resources or Attributes Not Described or Evaluated

Resource/Attribute	Rationale for Excluding from Evaluation
Air Quality	Solar PV systems are passive electric power generation systems. There is no combustion of material that might generate emissions. While there may be the emission of some fugitive dust during construction and panel washdown, it would be of a *de minimis* amount that would not be expected to impact surrounding air quality.
Aviation/Radar	The solar PV system would not affect flight patterns or radar communication used by aircraft.
Community Service	No public services, facilities, or utilities would be altered that could affect the community.
Economic Activity	The overall estimated construction costs and short time for construction would not affect the local economy. Although construction workers may patronize nearby businesses, any short-term effect to the economy would be negligible.
Environmental Justice	The proposed action would not have significant adverse impacts, and therefore, any low income or minority populations that may be in the vicinity of the facility would not be disproportionately affected.
Floodplains,	Installation of a rooftop or canopy system would not

Resource/Attribute	Rationale for Excluding from Evaluation
Wetlands, and Coastal Zones	impact floodplains or wetlands.
Geology and Soils	Installation of a rooftop system and/or canopy would not impact geology or soils. Areas available for a ground installation are minimal.
Land Use	Installation of a solar photovoltaic system would not impact existing or planned land use.
Potential for Creating Substantial Controversy	Use of renewable energy sources is generally viewed by the public as favorable. The installation of solar PV arrays would not likely create any negative controversy for the VA.
Real Property	The solar PV system would be within the boundaries of the facility; no change in land ownership, boundaries, or tax values would occur.
Transportation and Parking	Neither rooftop locations nor the tops of covered parking canopies would displace or disrupt any parking areas, travel lanes, or roads at or near the facility.
Environmental Regulations	The installation and operation of the solar PV system would comply with applicable regulations.

3.3 ISSUES STUDIED IN DETAIL

3.3.1 Noise

Because the potential exists for noise to be generated due to construction activities associated with implementation of the Proposed Action, noise impacts will be reviewed in this EA.

3.3.2 Utilities/Infrastructure

The purpose of the Proposed Action is the generation of additional power for the facility; therefore, impacts to utilities are analyzed in the EA.

3.3.3 Cultural Resources

Cultural resources refer to all elements of the physical and social environment that are thought to have cultural value. Cultural resources include historic properties, archaeological resources, sacred sites, religious sites, burial sites, properties of traditional religious and cultural importance, and Native American cultural items. Cultural resources are protected by a variety of laws and regulations, including the NHPA, as amended, and the Archaeological Resources Protection Act. Section 106 of the National Historic Preservation Act and implementing regulations (36 CFR 800) outline the procedures to be followed in the documentation, evaluation, and mitigation of impacts to cultural

Many of the buildings at this site were constructed in the 1930's and while none of the buildings are listed on the National Register of Historic Places the age of the facility and layout of the area has a certain character that would be better served by not imposing new construction that might diminish that historic character.

3.3.4 3.3.4 Surface Water Quality

Installation of support structures for the proposed car-port canopy PV systems would require some ground disturbance that could impact water quality in storm water runoff; therefore surface water quality will be evaluated in this EA.

4.0 AFFECTED ENVIRONMENT/ENVIRONMENTAL CONSEQUENCES

4.1 NOISE

4.1.1 Overview

Noise is defined as any sound that is undesirable because it interferes with communication, is intense enough to damage hearing, or is otherwise intrusive. Human response to noise varies depending on the type and characteristics of the noise, the distance between the noise source and the receptor, receptor sensitivity, and time of day.

Sound varies by both intensity and frequency. Sound pressure level, described in decibels (dB), is used to quantify sound intensity. The dB is a logarithmic unit that expresses the ratio of a sound pressure level to a standard reference level. Hertz (Hz) are used to quantify sound frequency. The human ear responds differently to different frequencies. A-weighing, described in a-weighted decibels (dBA), approximates this frequency response to express accurately the perception of sound by humans. Sounds encountered in daily life and their approximate levels in dBA are provided in Table 4-1.

Table 4-1.
Common Sounds and Their Levels

Outdoor	Sound level (dBA)	Indoor
Snowmobile	100	Subway train
Tractor	90	Garbage disposal
Noisy restaurant	85	Blender
Downtown (large city)	80	Ringing telephone
Freeway traffic	70	TV audio
Normal conversation	60	Sewing machine
Rainfall	50	Refrigerator
Quiet residential area	40	Library

Source: (Harris, 1998)

The dBA noise metric describes steady noise levels. Very few noises are, in fact, constant, so a noise metric, day-night sound level (DNL) has been developed. DNL is defined as the average sound energy in a 24-hour period with a 10-dB penalty added to nighttime levels (10 p.m. to 7 a.m.). DNL is a useful descriptor for noise because it averages ongoing yet intermittent noise, and it measures total sound energy over a 24-hour period. In addition, equivalent sound level (L_{eq}) is often used to describe the overall noise environment. L_{eq} is the average sound level in dB.

The Noise Control Act of 1972 (P.L. 92-574) directs Federal agencies to comply with applicable Federal, state, interstate, and local noise control regulations. In 1974, the USEPA provided information suggesting that continuous and long-term noise levels in

excess of DNL 65 dBA are normally unacceptable for noise-sensitive land uses such as residences, schools, churches, and hospitals.

4.1.2 Existing Environment

The current background noise at the VHSO facility is typical of what one might expect at a medical installation. Predictable sounds are created within the site by pedestrian and vehicular traffic, supply delivery, grounds maintenance, and facility equipment operation.

4.1.3 Impacts of Proposed Action

Solar panels are passive generators of electricity. Under normal operations, they should generate no sound. The only sounds to be expected would be during PV installation and maintenance. Installation sounds could cause local disturbance in those areas immediately adjacent to the parking areas where the equipment would be installed. These sounds could be annoying but would be of short duration. Little noise would be expected from routine wash-down maintenance. The overall impacts from such noise would be below any typical threshold of significance.

4.2 UTILITIES

4.2.1 Existing Environment

The facility's electrical service is rated at 800 amperes, 480/277 volts three-phase, four-wire, with an 800-ampere main circuit breaker. The service is fed from a utility-owned pad-mounted transformer located outside the building. Total annual site electrical consumption is 460,992 kWh (NOVI, 2011).

4.2.2 Impacts of Proposed Action

The proposed system would be a supply-side connection, meaning the AC output from the inverter would be connected at a point ahead of the main circuit breaker and downstream from the utility company's meter. This type of connection is required because the total connected AC load (231 amperes) exceeds 20 percent of the 800 ampere rating of the service entrance panel (160 amperes). Supply side connections for PV systems are permitted under National Electric Code Article 690.64(A).

The most obvious direct benefit of solar systems is that they generate electricity on site and result in reduced utility purchases. State regulations often provide that the utility company allow a PV system interconnection on its distribution system (through the building's electrical system) for net metering purposes. Net metering is a process that occurs when the solar panels are producing more electricity than the building is using. This is not a typical occurrence, but it could happen during off-peak periods when electrical demand is lower such as on weekends and holidays. When net metering occurs, the electric meter actually runs "backwards" reducing electricity usage from the meter.

Net metering is permitted after the PV system passes local electrical inspection (National Electric Code), passes the BPU inspection, meets all utility safety requirements and the customer has entered into an Interconnect Agreement with the utility. In order to accomplish net metering, the utility would install a new meter that has the capability of running in reverse.

By utilizing a renewable energy source with minimal negative environmental impact, the projected impact to utilities/infrastructure from the installation/operation of a canopy mounted solar voltaic system would be considered minor beneficial.

4.3 CULTURAL RESOURCES

4.3.1 Existing Environment

Many of the buildings at this site were constructed in the 1930's and while none of the buildings are listed on the National Register of Historic Places the age of the facility and layout of the area has a certain character that would be better served by not imposing new construction that might diminish that historic character.

4.3.1 Impacts of Proposed Action

Consideration to the appearance of solar or thermal panels on the roof tops of buildings dating from the 1930's was a part of the consideration in the decision not to use rooftop applications. Covered parking offers the advantages of automobile protections and offers shade and protection from inclement weather. These obvious visual advantages to the car-port style proposed canopy PV systems are easily recognized by the viewer/user of the parking. These visual cues make such applications acceptable in areas that may be near and/or within the view shed of the older buildings noted above. Because of the positive social impact and easy acceptance of the visual impact, any long-term impacts to cultural resources, were the older buildings considered for listing in the National Register of Historic Places, would be negligible and below the level of significance.

4.4 SURFACE WATER QUALITY

4.4.1 Existing Environment

The VHSO uses water supplied by the local municipal authority. Rain water runoff from parking lots is directed to the Fayetteville municipal storm sewer system which uultimately discharges into Beaver Lake.

4.4.2 Impacts of Proposed Action

Even though a possible carport canopy based system will have little impact to surface geology, storm water runoff can impact water quality, contributing sediment and other pollutants exposed during construction. Any potential impacts to water quality from the installation of the solar PV system would be short-term, localized, and negligible. During a rainfall event, sediment runoff and construction contaminants from the site could reach

the drainage area ultimately moving offsite if adequate control measures are not implemented and maintained during construction.

The construction contractor will be required to file a Notice of Intent with the appropriate state agency for coverage under a construction general permit for storm water discharge. This is necessary if discharge is associated with construction that disturbs more than one surface acre. The general permit requires a Storm Water Pollution Prevention Plan (SWPPP) be prepared and implemented. The SWPPP will outline best management practices such as silt fences, straw bales, or sand bags for temporary erosion along with sediment controls to minimize runoff from the site during construction. If these conditions are met, then the potential impacts to water quality from implementation of the proposed action would be considered minimal.

Another potential impact to water quality is panel maintenance. The panels would require periodic cleaning to maintain power generation efficiency. This cleaning would likely be a spray wash-down that may include a mild biodegradable household cleaner which could also ultimately reach Beaver Lake. In any event, such a small amount of dust, debris, and wash-down runoff would not be expected to impact lake water quality; therefore, impacts would be expected to be less than significant.

5.0 CONTACTS, COORDINATION AND PUBLIC PARTICIPATION

5.1 PUBLIC PARTICIPATION

In accordance with Department of Veterans Affairs and NEPA recommendations, public involvement has been a part of the development of this EA. On August 7-9, 2011 a Public Notice of Availability was run in the local Arkansas Democrat Gazette, the newspaper of record, announcing the proposed action and availability of a copy of the draft EA at the local library closest to the site of the proposed action. No public comment was received during a 30 day period concerning the proposed action.

5.2 UNITED STATES FISH & WILDLIFE SERVICE

5.3 ARKANSAS HISTORIC PRESERVATION OFFICE

5.4 POTENTIALLY IMPACTED INDIAN TRIBES

The above governmental agencies and Tribal Council were informed of the proposed action (see Appendix A for a copy of the Scoping Letters submitted). The intent of the letters was to solicit input from those agencies to determine if there was any objection/concern regarding the proposed action. To date, there has been no response from the Indian Tribe. Both the Arkansas State Historic Preservation Office and the United States Fish & Wildlife Service responded and concurred with this EA that there would be no significant impact to natural resource areas under their protection (see copy of respective responses in Appendix A).

6.0 REFERENCES

(Gable, 2010). Solar Feasibility Report for the Corpus Christi Outpatient Clinic. December 17, 2010. Gabel Associates, Inc.

(Harris, 1998). Harris, Cyril M. 1998. *Handbook of Acoustical Measurement and Noise Control*. New York: Acoustical Society of America.

(NOVI, 2011). Solar Photovoltaic (PV) and Solar Thermal Feasibility Study; Fayetteville Veterans Affairs Medical Center Fayetteville, Arkansas. February 17, 2011. NOVI Energy Associates.

(VA, 2011). Department of Veterans Affairs. Veterans Healthcare System of the Ozarks. Accessed July 2011 at: http://www.fayettevillear.va.gov

7.0 LIST OF PREPARERS

The contractor responsible for preparing this EA:

Mangi Environmental Group
7927 Jones Branch Drive, Suite 150
McLean, VA 22102
703-760-4801

The following Mangi Environmental Group personnel were principal contributors to this EA:

Randy Williams - Project Lead
George Hoddinott - Section 7 Review
Tori Hudgens - Historic Preservation/Indian Tribes Consultation
Nataliia Zadorkina - Editing

Appendix A

May 19, 2011

Mr. Allan Strand
Corpus Christi ESFO
United States Fish and Wildlife Services
6300 Ocean Drive, Unit 5837
Corpus Christi, TX 78412

Dear, Mr. Strand

Department of Veteran Affairs (VA) is preparing and Environmental Assessment (EA) for the implementation of a solar photovoltaic (PV) energy system at the Corpus Christi Outpatient Clinic (Figure 1). This EA will provide the VA with a decision making tool to assist in facilitating their decision on whether or not to proceed with the implementation of a PV system.

The Corpus Christi Outpatient Clinic is located in Corpus Christi, Texas. It is located just 5 miles southeast of the Corpus Christi International Airport. It provides primary care services for Veterans in the Corpus Christi area. In addition to primary care, this center provides mental health, orthopedic, nutrition, podiatry, social work, Tele-med, pharmacy, women's health, diagnositc services, X-Ray, and physical therapy services available to eligible Veterans. VA-DOD agreement provides optometry and opthalmology.

As part of our coordination and consultation responsibilities, and to comply with Section 7 of the Endangered Species Act of 1973, as amended, we are initiating informal threatened and endangered (T&E) species consultation. Enclosed is a table of the federally listed species we have identified as potentially occurring in the project area in Nueces County based on our preliminary review. General impacts we have identified that could occur under any of the alternatives include:

- disturbance and displacement of species during construction; and
- loss and fragmentation of habitat with the construction of buildings and roads;

However, it should be pointed out that no decision has yet been made to move forward with a PV system. Further, such PV systems would probable occur in an already disturbed urban/suburban environment; therefore the possibility of disturbance/displacement of listed species is minimal.

If you have any questions regarding issues related to the project, please contact me by email at RWilliams@mangi.com.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
110 South Amity Road, Suite 300
Conway, Arkansas 72032
Tel: 501/513-4470 Fax: 501/513-4480

August 8, 2011

Reference: 43421-2011-I-1117

Mr. Randy Williams
The Mangi Environmental Group, Inc.
7927 Jones Branch Drive
McLean, VA 22102

Dear Mr. Williams:

The U.S. Fish and Wildlife Service (Service) has reviewed the information supplied in your letter dated July 25, 2011, regarding the proposed construction of a new solar photovoltaic (PV) energy system at the Veterans Health Care Systems of the Ozarks in Washington County at 100 North College Avenue, Fayetteville, AR 72703. Our comments are submitted in accordance with the Endangered Species Act (ESA: 87 Stat. 884, as amended 16 U.S.C. 1531 et seq.) and the Migratory Bird Treaty Act (16 U.S.C. 703-712).

Recently published studies indicate that wildlife can be negatively affected by renewable energy development, particularly wind and solar development. This may also include single, small-scale features. Birds and bats can be directly affected when they collide with tall structures and moving components, such as wind turbine rotors. Indirect effects occur when sensitive wildlife species are displaced by altering or removing key components of their habitat, such as in the case of solar power. As more facilities are built, the cumulative effects of this rapidly growing industry may initiate or contribute to the decline of some wildlife populations. The effects likely can be reduced or avoided by strategic placement of facilities and infrastructure, such as access roads and distribution and transmission lines, as well as other best management practices.

The following listed endangered, threatened, or candidate species are known to occur in Washington County, Arkansas: Ozark big-eared bat (*Corynorhinus townsendii ingens*), Florida panther (*Felis concolor coryi*), Missouri bladderpod (*Physaria filiformis*), Indiana bat (*Myotis sodalist*), cave crayfish (*Cambarus aculabrum*), Piping Plover (*Charadrius melodus*), Neosho mucket (*Lampsilis rafinesqueana*), Arkansas darter (*Etheostoma cragini*), rabbitsfoot (*Quadrula cylindrical*) and the gray bat (*Myotis grisescens*). The Service concurs with the Department of Veterans Affairs' determination that this project will not disturb or displace any of the above Listed species. This project is not likely to adversely affect any of the above federally listed threatened or endangered species.

MANGI ENVIRONMENTAL GROUP
703 760 4801 Fax 703 760 4899
www.mangi.com
Viet Nam Veteran Owned

May 16, 2011

Dan Deerinwater, Regional Director
Bureau of Indian Affairs South Plains Regional Office
WCD Office Complex P.O. Box 368
Anadarko, OK 73005

Subject Corpus Christi Veterans Affairs Outpatient Clinic Solar Photovoltaic System Installation

Dear Mr. Deerinwater,

Located at 5283 Old Brownsville Road Corpus Christi, Texas, the Corpus Christy Veterans Affairs Outpatient Clinic proposes to install a solar photovoltaic system consisting of both roof top and canopy types compatible with an urban environment that would supplement the electrical power need of the facility.

The Veterans Affairs (VA) would install a solar photovoltaic system consisting of both roof top and canopy types compatible with an urban environment that would supplement the electrical power need of the facility. The installing and operating the solar PV system would assist in meeting EO 13423 goals through on-site installation of a renewable energy generation system and to reduce the amount of electrical energy needed from commercial sources.

All work would be done in compliance with applicable regulations.

I submit this letter on behalf of the Corpus Christi Veterans Affairs Outpatient Clinic facility to request information on any concerns from your Tribe regarding this proposed project.

Feedback before June 30th would assist in being able to incorporate your feedback into the draft environmental assessment.

Please let me know if you have any questions.

Sincerely,
Tori Hudgins
thudgins@mangi.com
703-760-4801 x245

TEXAS HISTORICAL COMMISSION

REQUEST FOR SHPO CONSULTATION:
Projects Subject to Section 106 of the National Historic Preservation Act and/or the Antiquities Code of Texas

Submission of this form only initiates consultation with the Texas Historical Commission, the State Historic Preservation Officer (SHPO) for Texas. The SHPO may require additional information to complete the review for some projects.

FCC projects: this form should not be completed when submitting Form 620 or 621 for communications towers.

Section 106 of the National Historic Preservation Act of 1966, as amended, requires federal agencies to consider the effects of their undertakings on historic properties and to consult with the State Historic Preservation Officer (SHPO) regarding the undertaking. An undertaking is any action by or on behalf of a federal agency that has the potential to affect historic resources and includes funding, permits, or other approvals. Federal agencies are required to identify historic resources that may be affected and to avoid, minimize, or mitigate any adverse effects. The Section 106 regulations are codified in 36 CFR 800 and are available from the Advisory Council on Historic Preservation website at www.achp.gov. Regulations allow 30 days upon receipt for SHPO review.

The Antiquities Code of Texas (Title 9, Chapter 191 of the Texas Natural Resources Code) is intended to protect historic and archeological landmarks and is applicable to public lands owned by the state of Texas or a political subdivision of the state, including state agencies, counties, cities, school districts, and public colleges and universities, as well as other public authorities. Notification of the Texas Historical Commission is required before breaking ground at a project location on state or local public land.

☐ This is a new submission
Complete all pages of this form and include required attachments.

☐ This is additional information relating to original submission made on or about _____
Complete only the first page of this form and add any new information, including attachments.

1. Project Information

PROJECT NAME

PROJECT ADDRESS | PROJECT CITY | PROJECT ZIP CODE(S)

PROJECT COUNTY OR COUNTIES

PROJECT TYPE (Check all that apply)

☐ Road/Highway Construction or Improvement
☐ Site Excavation
☐ Utilities & Infrastructure
☐ New Construction
☐ Repair, Rehabilitation or Renovation of Structure(s)
☐ Addition to Existing Structure(s)
☐ Demolition or Relocation of Existing Structure(s)
☐ None of these

BRIEF PROJECT SUMMARY: Please provide a one or two sentence description to explain the project. More details will be provided separately in Part 5, the Project Work Description Attachment.

2. Project Contact Information

PROJECT CONTACT NAME | TITLE | ORGANIZATION

ADDRESS | CITY | STATE | ZIP

PHONE | EMAIL

For SHPO Use Only **Date Stamp Below:**

Track Review to:

☐ Archeology Division: Reviewer:

☐ History Programs Division: Reviewer:

☐ Architecture Division: Reviewer:

THE MANGI ENVIRONMENTAL GROUP, INC.
7927 Jones Branch Dr. McLean VA 22102
(703) 760-4801 Fax (703) 760-4899
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Viet Nam
Veteran
Owned

77771
VA

August 29, 2011

AHPP
SEP 06 2011

Ms. Frances McSwain, Deputy SHPO
Arkansas Historic Preservation Program
1500 Tower Building
323 Center Street
Little Rock, AR 72201

RE: Washington County – Fayetteville Section 106 Review – VA
Veterans Health Care System of the Ozarks
AHPP Tracking Number: 77771

Ms. McSwain

This letter is written in response to your letter of August 16th (copy attached) requesting additional information regarding the type and placement of proposed parking canopy solar panels at the subject facility. Figure 1 below highlights the location of parking lot locations at Sites 1 and 3 relative to buildings at the site. Sites 1 and 2 shown on Figure 1 were eliminated from further consideration at possible roof-top applications. Figure 2 below give a picture of what a typical car-canopy solar application would look like.

We believe that the proposed parking lot sites 2 and 3 are of a sufficient distance from the buildings of concern as to not interfere with the visual aesthetics or the historic character of the area. If you have any further questions or comments, please contact me.

Randy Williams, Project Manager
Mangi Environmental Group
rwilliams@mangi.com
985/264-1979

Date 9/12/11
No known historic properties will be affected by this undertaking. This effect determination could change should new information come to light.
Frances McSwain, Deputy State Historic Preservation Officer

October 12, 2011

GEMS Coordinator (005)

Environmental Assessment Posting Results

Medical Center Director (00)
Thru: Associate Director (001)
Chief, Engineering (138)

1. An Environmental Assessment was performed by Mangi Environmental Group analyzing the proposed construction of a Photovoltaic System (Solar panels) at the Veterans Health Care System of the Ozarks (VHSO). The full text of this assessment indicated that there would be no harm done to the environment. This Environmental Assessment allowed the VA to draft and issue a Finding of No Significant Impact (FONSI).

2. At this time it is requested that the FONSI be finalized by receiving your signature as the VHSO Director, VHSO Associate Director and Chief of Engineering. Submission of this finalized FONSI shall allow a Notice to Proceed. Your response to this matter is greatly appreciated.

Tod Johnson

FINDING of NO SIGNIFICANT IMPACT
for
ENVIRONMENTAL ASSESSMENT
Installation of a Solar Photovoltaic System
at the

VETERANS HEALTH CARE SYSTEM OF THE OZARKS
FAYETTEVILLE, ARKANSAS

United States Department of Veterans Affairs

INTRODUCTION

An Environmental Assessment (EA) has been prepared under the direction of an interdisciplinary team analyzing the proposed construction of a Photovoltaic System at the Veterans Healthcare System of the Ozarks (VHSO) in Fayetteville, Arkansas. The Department of Veterans Affairs (VA) evaluated Veterans Health Administration and National Cemetery Administration facilities nationwide to identify locations with the highest potential to use solar technologies. The evaluation, completed by the Department of Energy's National Renewable Energy Laboratory (NREL), identified the VHSO as a potential location for solar photovoltaic (PV) system installation.

The proposed action, to install additional solar PV systems at the VHSO, is a federal action subject to the procedural requirements of the *National Environmental Policy Act of 1969* (NEPA) (42 U.S. Code 4321 et seq.). NEPA requires federal agencies consider environmental consequences in their decision-making process. The Council on Environmental Quality (CEQ) issued regulations (40 Code of Federal Regulations [CFR] Parts 1500-1508) to implement NEPA that include provisions for both the content and procedural aspects of the required environmental analysis. The VA complies with NEPA and CEQ implementing regulations in accordance with 38 CFR Part 26 (*Environmental Effects of the Department of Veterans Affairs Actions*).

PURPOSE AND NEED FOR ACTION

The purpose of this project, the installation and operation of a PV system, is to supply the VHSO with a more efficient and cost-effective source of energy. The use of a PV system will assist the VA in meeting their renewable energy goals. The stated goals for energy conservation and the use of renewable energy include promoting efficiency in building design and operations, energy consumption, water conservation and use of new advances in energy conservation technologies. More specifically, they include:

- Reducing greenhouse gas emissions by 30 percent in as compared to fiscal year (FY)1990 emission levels;
- Reducing energy consumption per square foot by 35 percent as compared to FY 1985;
- Expanding the use of renewable energy within VA facilities;
- Reducing the use of petroleum within VA facilities;
- Promoting energy-efficient construction and building design for VA facilities; and
- Using Energy Star and other energy-efficient equipment within VA facilities.

The need for the project is for the VHSO to generate energy through more efficient and environmentally preferable means.

Specific laws and executive orders require federal agencies to reduce energy consumption and improve energy efficiency through the use of alternative fuels and renewable sources. The *National Energy Conservation Policy Act*

serves as the underlying authority for federal energy management goals and requirements. Signed into law in 1978, it is regularly updated and amended by subsequent laws, the most recent being the *Energy Independence and Security Act of 2007*. Executive Order (E.O.) 13423, *Strengthening Federal Environmental, Energy, and Transportation Management*, updates prior energy management practices and goals, such as reducing energy intensity by three percent annually through 2015 or by 30 percent by 2015, and requiring that at least half of the statutorily required renewable energy consumed annually is from new renewable sources. The E.O. directs federal agencies to implement renewable energy generation projects on agency property for agency use.

The VA has a need for reliable energy at its health care facilities while pursuing options for reducing energy demand and cost. The VA must also meet the renewable energy goals established by laws and executive orders. The purpose and need for installing and operating a solar PV system (proposed action) would be to meet E.O. 13423 goals through on-site installation of a renewable energy generation system and to reduce the amount of electrical energy needed from commercial sources.

LOCATION of PROPOSED ACTION

The VHSO is located within the City of Fayetteville in Washington County, Arkansas. It is located in an urban area along a commercial corridor with residential neighborhoods to the south and west (see Figure below).

Project Vicinity Map

PROPOSED ACTION AND ALTERNATIVES

No-Action Alternative

The no-action alternative would be to not install a solar PV system at VHSO. The facility would continue to receive additional required energy from the local commercial utilities. The no-action alternative would not meet the purpose and need of achieving renewable energy goals through on-site installation of a renewable energy generation system.

Proposed Action

The solar PV system proposed for the VHSO consists of carport canopy-mounted PV arrays, inverters, and ancillary equipment to connect to the building electrical system. The PV arrays provide direct current (DC) power at a voltage depending on the configuration of the arrays. An inverter is required to convert the DC to alternating current (AC) of the desired voltage compatible with building and utility power systems in addition to providing important safety, monitoring, and control functions.

REASONS FOR THE DECISION

The proposed action alternative was selected because it:

1. Best satisfies the purpose and need and issues developed for the proposal.
2. Minimizes environmental impact.
3. Human health and safety will be protected.

The no-action alternative was not selected because it fails to satisfy the purpose and need of the proposed action and relevant issues identified through scoping.

FINDINGS REQUIRED BY OTHER LAWS

This decision is consistent with applicable laws and regulations:

The National Environmental Policy Act of 1969 (NEPA), as amended (42 U.S.C 4321 et seq.) – Requires analysis of major federal actions that could have a significant impact on the environment.

The National Energy Conservation Policy Act of 1978 – Serves as the underlying authority for federal energy management goals and requirements.

Energy Independence and Security Act of 2007. Executive Order (EO) 13423, Strengthening Federal Environmental, Energy, and Transportation Management – Updates prior energy management practices and goals, such as reducing energy intensity by three percent (%) annually through 2015 or by 30% by 2015, and requiring that half of renewable energy consumed annually is from new renewable sources. The EO directs federal agencies to implement renewable energy generation projects on agency property for agency use.

DECISION AND FINDING OF NO SIGNIFICANT IMPACT

Decision – Based on the information gathered during the preparation of the EA, the Department of Veterans Affairs finds that implementation of the Proposed Action with appropriate mitigation measures is not a major federal action significantly affecting the quality of the human environment, within the meaning of the National Environmental Policy Act (NEPA) of 1969, 42 United States Code 4321, *et seq*. Accordingly, the preparation of an Environmental Impact Statement (EIS) for this Proposed Action is not warranted and a Finding of No Significant Impact (FONSI) is being issued.

Context – This decision is a site-specific action that by itself does not have international, national, or statewide importance. The discussion of the significance criteria that follows applies to this decision and is within the context of local and regional importance.

Intensity – The following discussion is organized around the Ten Significance Criteria described in the NEPA regulations (40 CFR 1508.27).

1. The analysis documented in the EA did not identify any individual or cumulatively significant adverse effects.
2. Public health and safety is not adversely affected.
3. Planned actions will not significantly affect any unique characteristics or features of the geographic area, such as wetlands, park lands, prime farm lands, wild and scenic rivers, floodplains, or ecologically critical areas, etc.
4. The effects on the quality of the human environment are not likely to be highly controversial.
5. The actions do not involve highly uncertain, unique, or unknown environmental risks.
6. The actions in this decision will not set a precedent influencing approval of future actions with significant effects.
7. The possible cumulative effects of the proposed action have been analyzed with consideration for past and reasonable foreseeable future activities on adjacent private and public lands. Cumulative impacts over space and time will not be significant.
8. The proposed action will have no adverse effect on any sites listed, or eligible for listing, in the National Register of Historic Places nor will they cause the loss or destruction of significant scientific, cultural, or historical resources.
9. Implementing this decision will not adversely affect threatened or endangered species, or result in loss of any other species' viability, or create significant trends toward federal listing of species under the Endangered Species Act.
10. None of the actions threaten to lead to violations of federal, state, or local laws imposed for the protection of the environment.

RESPONSIBLE OFFICIAL SIGNATURE/ DATE

Recommend Approval / Disapproval

John Henley MD

Director

11.25.11

Date of Decision

Associate Director for Facility

11/25/11

Date of Decision

Approve / Disapprove

11/16/11

Date of Decision

Chief of Engineering